IN THE CLAIMS

1. (Currently amended) ~~A totally~~ An implantable nerve stimulation system, comprising:

~~one or more nerve cuffs~~ at least one nerve cuff so configured as to receiving part of a nerve, the nerve cuff having electrodes therein ~~that contact a~~ positioned in the vicinity of nerve ~~or nerves~~ fibers;

~~an event triggered, closed loop control unit that is connected to receive signals from at least one electrode in a nerve cuff and to deliver stimulation pulses to at least one electrode in order to produce a desired physiological response, the closed loop~~ a control unit including:

~~an internal electrical~~ a power source;

a processor;

~~signal conditioning circuits;~~

~~a programmable switch controlled by the processor to connect an electrode to a signal conditioning circuit;~~

~~a number of~~ at least one signal conditioning circuit[s] so connected to the electrodes of the at least one nerve cuff as to receive signals from the nerve fibers;

at least one stimulation circuit [that] so connected to the electrodes of the at least one nerve cuff as to deliver[s] [a] stimulation pulses ~~to one or more of the electrodes~~ to the nerve fibers;

wherein the processor is so configured as to a) selectively [enables]-activate the ~~number of~~ at least one signal conditioning circuit[s]~~, the programmable switch and~~ in order to detect a physiological event and b) activate the at least one stimulation circuit in response to ~~lengthen~~ the ~~life~~ detection of the ~~electrical power source~~ physiological event.

2. (Currently amended) The implantable nerve stimulation system of claim 1, wherein the at least one signal conditioning circuit[s] includes:

a low input current amplifier;

a rectifier circuit; and

an integrator circuit.

3. (Currently amended) The implantable nerve stimulation system of claim 2, wherein the nerve stimulation system stimulates nerve fibers to treat foot drop and wherein the ~~processor receives output signals from the number of signal conditioning circuits to detect~~ physiological event is the occurrence of a heel contact or toe lift event.

4. (Currently amended) The implantable nerve stimulation system of claim 3, wherein the processor [delivers] is so configured as to activate the at least one stimulation ~~pulse to an electrode upon~~ circuit in response to the detection of a toe lift event.

5. (Currently amended) The implantable nerve stimulation system of claim 4, wherein the processor disables the ~~number of~~ at least one signal conditioning circuits during at least a portion of the time when the at least one stimulation [pulse] circuit is [delivered] activated.

6. (Currently amended) The implantable nerve stimulation [circuit] system of claim 1, wherein the ~~closed-loop~~ control unit further includes an accelerometer in communication with the processor, the accelerometer producing ~~that produces~~ a signal indicative of an orientation of a patient's thigh, and wherein the processor disables components of the ~~closed-loop~~ control unit when the signal indicative of the orientation of the patient's thigh indicates that the patient's thigh is substantially horizontal.

7. (Currently amended) The implantable nerve stimulation [circuit] system of claim 6, wherein the processor is so configured as to adjust[s] the delivered stimulation pulses [delivered] as a function of the [angle] orientation of the patient's thigh.

8. (Canceled)

9. (Currently amended) The implantable nerve stimulation system of claim 3, wherein the processor is so configured as to detect[s] the occurrence of a heel contact or toe lift event by filtering [the] output signals produced by the at least one ~~or more~~ signal conditioning circuit[s] and comparing the filtered output signals with the unfiltered output signals to detect a rising or falling ramp in the output signals and wherein the processor activates the at least one stimulation circuit so as to cause[s] at least one stimulation pulse to be delivered to ~~an electrode~~ the nerve fibers upon detection of a toe lift event.

10. (Currently amended) The [fully] implantable nerve stimulation system ~~for treating foot drop~~ of claim 9, wherein the ~~closed-loop~~ control unit further includes an accelerometer in communication with the processor, the accelerometer producing a signal indicative of the angle of a patient's thigh, and wherein the processor is so configured as to adjust[s] the stimulation [signals] pulses delivered by the at least one stimulation circuit in response to the angle of the patient's thigh.

11. (Currently amended) The [fully] implantable nerve stimulation system ~~for treating foot drop~~ of claim 10, wherein the processor is so configured as to terminate[s] the [delivery] activation of the at least one stimulation [pulse] circuit upon detection of a heel contact event if the signal indicative of the patient's thigh angle indicates the patient is walking on a relatively flat surface.

12. (Currently amended) The [fully] implantable nerve stimulation system ~~for treating foot drop~~ of claim 10, wherein the processor is so configured as to terminate[s] the [delivery] activation of the at least one stimulation [pulse] circuit upon detection of a second toe lift event if the signal indicative of the patient's thigh angle indicates the patient is walking on a stair.

13. (Currently amended) The [fully] implantable nerve stimulation system ~~for treating foot drop~~ of claim [12] 10, wherein the processor is so configured as to increase[s] the magnitude of

the stimulation pulses delivered by the stimulation circuit if the signal indicative of the patient's thigh angle indicates the patient is walking up a stair.

14. (Currently amended) The [fully] implantable nerve stimulation system of claim [12] 10, wherein the processor is so configured as to decrease[s] the magnitude of the stimulation pulses delivered by the stimulation circuit if the signal indicative of the patient's thigh angle indicates that the patient is walking down a stair.

15. (Currently amended) The [fully] implantable nerve stimulation system of claim 10, wherein the processor is so configured as to reduce[s] the power drawn from the [electrical] power source if the signal indicative of the angle of the patient's thigh indicates the patient is not standing.

16. (Currently amended) The [fully] implantable nerve stimulation system of claim 9, wherein the at least one ~~or more~~ nerve cuff includes a first nerve cuff ~~placed around~~ so configured as to receive part of the tibial nerve and a second nerve cuff ~~placed around~~ so configured as to receive part of the common peroneal nerve.

17. (Currently amended) The [fully] implantable nerve stimulation system of claim 9, wherein the at least one ~~or more~~ nerve cuff[s] includes a [single] nerve cuff ~~placed around~~ so configured as to receive part of the common peroneal nerve.

18. (Currently amended) The [fully] implantable nerve stimulation system of claim 9, wherein the at least one ~~or more~~ nerve cuff includes a [single] nerve cuff ~~placed around~~ so configured as to receive part of the sciatic nerve.

19. (Canceled)

20. (Currently amended) The implantable nerve stimulation system ~~for treating foot drop~~ of claim [19] 3, wherein the control unit further comprises:

an accelerometer [that] so configured as to produce[s] signals indicative of the angle of a patient's thigh and wherein the processor is so configured as to adjust[s] the power drawn from the electrical power source in response to the thigh angle.

21. (Currently amended) The implantable nerve stimulation system ~~for treating foot drop~~ of claim 20, wherein the processor adjusts the stimulation pulse delivered to the electrodes in response to the thigh angle.

22. (Currently amended) The implantable nerve stimulation system ~~for treating foot drop~~ of claim [19] 3, wherein the control unit further comprises:

a programmable switch ~~that is~~ so controlled by the processor as to selectively couple[s] [a] one of the at least one signal conditioning circuit to [an] the electrodes of one of the at least one signal conditioning circuit.

23. (Currently amended) The implantable nerve stimulation system ~~for treating foot drop~~ of claim [20] 10, wherein the processor is so configured as to enable[s] the at least one signal conditioning circuit periodically when the signal indicative of the patient's thigh angle indicates the patient's thigh is horizontal.

24. (Currently amended) The implantable nerve stimulation system ~~for treating foot drop~~ of claim [20] 10, wherein the processor is so configured as to enable[s] the at least one signal conditioning circuit more frequently when the signal indicative of the patient's thigh angle indicates the patient's thigh is vertical.

25. (Currently amended) [An] The implantable nerve stimulation system of claim 20, ~~circuit for correcting foot drop comprising:~~

~~one or more nerve cuffs including a number of electrodes to be placed around a nerve for sensing nerve signals and/or for delivering stimulation pulses to a nerve;~~

~~an implantable event driven control unit including:~~

~~a source of electrical power;~~

~~a processor;~~

~~a sensor for producing a signal indicative of an angle of a patient's thigh;~~

~~a number of signal conditioning circuits that are selectively connectable under control of the processor to one or more electrodes to process nerve signals;~~

~~at least one nerve stimulation circuit that is selectively connectable to an electrode to deliver a stimulation pulse to the nerve;~~

wherein the processor is [programmed] so configured as to operate in a plurality of modes that are dependent in part on the [sensed] signal indicative of the angle of the patient's thigh.

26. (Currently amended) The implantable [circuit] nerve stimulation system of claim 25, wherein the processor is [programmed] so configured as to reduce power drawn from the power source ~~of electrical power~~ when the signal indicative of the angle of the patient's thigh indicates that the patient's thigh is ~~sensed to be~~ substantially horizontal.

27. (Currently amended) The implantable [circuit] nerve stimulation system of claim 25, wherein the processor is [programmed] so configured as to detect heel contact or toe lift events from [sensed] output signals ~~on a nerve~~ produced by the at least one signal conditioning circuit when the [sensed] signal indicative of the angle of the patient's thigh indicates that the patient is standing.

28. (Currently amended) The implantable [circuit] nerve stimulation system of claim 27, wherein the processor is [programmed] so configured as to detect heel contact or toe lift events from ~~processed nerve~~ filtered and unfiltered output signals produced by the at least one signal conditioning circuit[s].

29. (Currently amended) The implantable [circuit] nerve stimulation system of claim 28, wherein the ~~processed nerve~~ filtered output signals are filtered with a morphological filter.

30. (Currently amended) The implantable [circuit] nerve stimulation system of claim 25, wherein the processor is [programmed] so configured as to adjust the ~~stimulation pulse~~ delivered ~~to a nerve~~ stimulation pulses as a function of the [sensed] signal indicative of the angle of the patient's thigh.

31. (Currently amended) The implantable [circuit] nerve stimulation system of claim [25] 1, wherein the power source ~~of electrical power is~~ includes a battery.

32. (Currently amended) The implantable [circuit] nerve stimulation system of claim 31, wherein the battery is rechargeable.

33. (Currently amended) The implantable [circuit] nerve stimulation system of claim [25] 1, wherein the control unit further includes a communication circuit that communicates with an external programmer to adjust the operation of the processor.

34. (Currently amended) The implantable [circuit] nerve stimulation system of claim 33, wherein the external programmer can adjust which electrodes [a] the at least one signal conditioning circuit is connected to, and which electrodes receive[s] [a] the stimulation pulses.

35. (Currently amended) The implantable [circuit] nerve stimulation system of claim 25, wherein the processor is [programmed] so configured as to disable the ~~number of~~ at least one signal conditioning circuit[s] when a stimulation pulse is being delivered to [an] the electrodes of one of the at least one nerve cuff.

36. (Currently amended) The implantable [circuit] nerve stimulation system of claim 25, wherein the processor is [programmed] so configured as to periodically enable the ~~one or more~~ at least one signal conditioning circuit[s] wherein the [sensed] signal indicative of the angle of the patient's thigh indicates that the patient's thigh is substantially horizontal.

37. (Currently amended) [An] The implantable nerve stimulation system of claim 1, ~~circuit for delivering stimulation signals to a patient's muscle, comprising:~~

~~one or more nerve cuffs including a number of electrodes to be placed around a nerve for sensing nerve signals and/or for delivering stimulation pulses to a nerve;~~

~~an implantable event driven control unit including:~~

~~a source of electrical power;~~

~~a processor;~~

~~a number of signal conditioning circuits that are selectively connectable under control of the processor to an electrode to process nerve signals;~~

~~at least one nerve stimulation circuit that is selectively connectable to an electrode to deliver a stimulation pulse to the nerve;~~

wherein the nerve stimulation system is so configured as to stimulate a patient's muscle, and wherein the processor is [programmed] so configured as to operate in a user initiated exercise mode such that the at least one stimulation ~~signals are delivered to a nerve signal for a~~ circuit is activated for a selectable period of time to exercise the patient's muscle.

38. (New) The implantable nerve stimulation system of claim 1, wherein the processor selectively enables the at least one conditioning circuit and the at least one stimulation circuit so as to lengthen the life of the power source.